Deep Space Habitat Project (DSH)

Canceled Technology Project (2011 - 2013)

Project Introduction

The Deep Space Habitat was closed out at the end of Fiscal Year 2013 (September 30, 2013). Results and select content have been incorporated into the new Exploration Augmentation Module (EAM) Project. The Deep Space Habitat project charter is to 1) Define and mature space habitat concepts and architectures; 2) Transition habitat-related products into demonstration prototypes; 3) Mature habitat-related concepts, technologies and systems; and 4) Focus and infuse habitat-related technologies.

The Deep Space Habitat project delivers concepts for light-weight, safe and reliable exploration habitats capable of: o Supporting humans living and working in space and on planetary bodies o Autonomous operation o Systems failure detection, analysis, and self-repair The Deep Space Habitat project investigates habitation concepts for multiple destinations such as: o Cis-lunar space o Interplanetary Space (to include Near Earth Asteroids) This is to drive out opportunities for commonality, early development investment, and early risk mitigation. This project also focuses on maturing exploration habitation subsystems such as: o Structures and mechanisms o Environmental control and life support systems o Active and passive thermal control systems o Power management and distribution o Avionics o Software management system o Communications o Environmental protection & particulate (dust) mitigation o Mission operations/command & control o Crew systems/interfaces: displays & controls, galleys, quarters o Extravehicular activity & robotics o Instrumentation & sensors o Food supplementation The process for the Deep Space Habitat project to deliver on these objectives include iterative loops of: o Concept definition and development o Systems integration o Testing o Building and outfitting habitation prototypes The habitat prototypes function as a(n) o Technology pull o Test bed o Integration capability to advance NASA's understanding of alternative o Mission architectures o Requirements o Operations concepts definition and validation

Anticipated Benefits

A deep space habitat is a technically greater challenge than ISS in the areas of logistics, radiation, communication, autonomous systems, storage & disposal, and volume utilization. Advancing the state of the art to meet Deep Space Habitat project objectives will make available enhancing technologies for ISS as well. For interplanetary exploration, the Multi-Purpose Crew Vehicle (MPCV) is only the Earth-to-orbit "dinghy". A deep space habitat is part of the architecture for a true deep spacegoing vessel.

Deep Space Habitat Project

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Organizational Responsibility

Responsible Mission Directorate:

Exploration Systems Development Mission Directorate (ESDMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Exploration Capabilities

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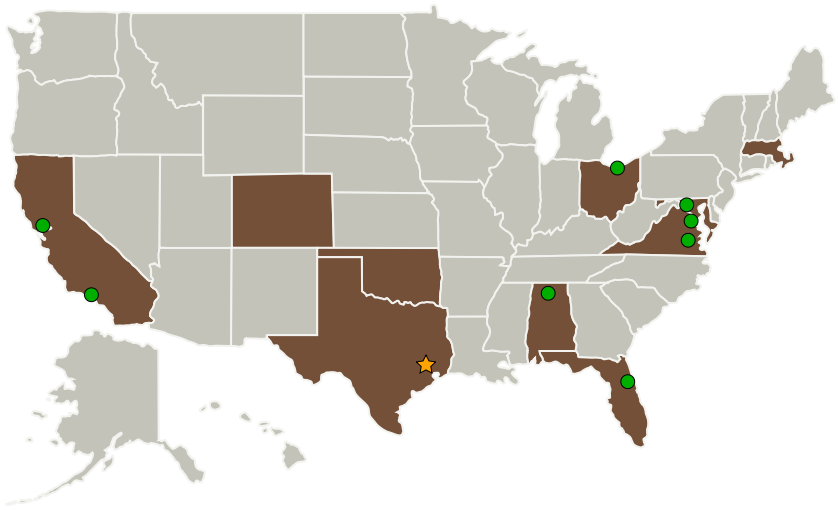
Primary U.S. Work Locations and Key Partners



Project Management

Program Director:

Christopher L Moore

Project Manager:

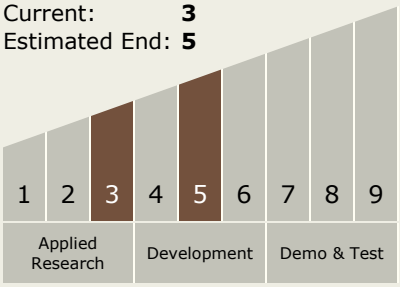
Lora J Bailey

Principal Investigator:

Paul S Bookout

Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **5**



Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.2 Mission Infrastructure, Sustainability, and Supportability
    - TX07.2.1 Logistics Management

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
●Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
California State Polytechnic University-Pomona	Supporting Organization	Academia	Pomona, California
●Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio
●Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland
Jacobs Engineering Group, Inc.	Supporting Organization	Industry	Dallas, Texas
●Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
●Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
●Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
●Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama
●NASA Headquarters(HQ)	Supporting Organization	NASA Center	Washington, District of Columbia
Oklahoma State University-Main Campus	Supporting Organization	Academia	Stillwater, Oklahoma
Texas A & M University-College Station(Texas A&M)	Supporting Organization	Academia	College Station, Texas
University of Alabama in Huntsville(UAH)	Supporting Organization	Academia	Huntsville, Alabama

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Organizations Performing Work	Role	Type	Location
University of Colorado Boulder	Supporting Organization	Academia	Boulder, Colorado

Co-Funding Partners	Type	Location
Army	US Government	Washington, District of Columbia
Navy	US Government	

Primary U.S. Work Locations	
Alabama	California
Colorado	District of Columbia
Florida	Maryland
Massachusetts	Ohio
Oklahoma	Texas
Virginia	

Project Transitions

October 2011: Project Start

September 2013: Project canceled because merged or otherwise absorbed into another project

Rationale: Project canceled because merged or otherwise absorbed into another project

September 2013: Closed out

Closeout Summary: To request closeout information for this project, please send an email with the Subject "TechPort Closeout Report Request" to hq-aes@mail.nasa.gov and specify which project closeout report you are requesting.

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Images

Deep Space Habitat Project
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(https://techport.nasa.gov/image/1264)